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# Changes in Children's Agency Beliefs and Control Expectancy in Classes With and Without a Special Emphasis in Finland from Grade Four to Grade Six

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## ABSTRACT

This study examined changes in pupils' agency beliefs and control expectancy from grade four to grade six, and whether they were associated with studying in a class with a special emphasis on a subject as compared to studying in a class without emphasis. After controlling for the effects of mother's education, prior school achievement, and gender, we found that the average pattern of change varied for different action-control beliefs, and that class membership did not moderate these changes. Mother's education, pupils' prior school achievement, and gender all predicted class membership, but their effects on action-control beliefs varied depending on the type of belief. Implications for educational policy will be discussed.

## ARTICLE HISTORY

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## KEYWORDS

Action-control beliefs; agency beliefs; control expectancy; classes with a special emphasis; longitudinal study; elementary school

## 1. Introduction

This study investigates whether studying in a class with a special emphasis has an effect on pupils' self-beliefs. Our focus is on pupils' agency beliefs and control expectancy (Skinner, Chapman, & Baltes, 1988), which can be considered as some of the key components in the development of pupils' agency and motivation. Classes with a special emphasis have become an important part of the Finnish basic education system since their introduction in the 1990s. Nowadays, an increasing number of pupils attend these classes, which, compared to classes without emphasis, have more lessons in the target subject (e.g. music or languages) as well as the possibility to select pupils through aptitude tests (Seppänen, Rinne, & Riipinen, 2012). Due to this selectivity, classes with a special emphasis have become a topic much debated in Finland. While some researchers have been concerned about the effects such classes might have on the equality of educational opportunities in the Finnish non-tracking basic education system, also potential positive consequences have been speculated (Seppänen, 2003b). One common assumption is that studying in a selective peer group in a class with a special emphasis will increase pupil's motivation and positive attitudes towards the school (e.g. Kosunen & Carrasco, 2016). However, studies on class composition have reported conflicting findings (for review, see, Hattie, 2002; Hattie, 2009; Steenbergen-Hu, Makel, & Olszewski-Kubilius, 2016): on the one hand, most children seem to benefit from well-performing classmates (e.g. Burke & Sass, 2013; Duru-Bellat & Mingat, 1998), but on the other hand, heterogeneity of the peer group may

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also have a positive effect on learning outcomes (Dobbelsteen, Levin, & Oosterbeek, 2002). Classmates influence children's conception of themselves as learners, and if the reference group is above average in terms of performance, the effects may even be detrimental (e.g. Marsh et al., 2008). Therefore, it seems of particular relevance to examine whether studying in a class with a special emphasis on a subject is associated with pupils' motivational beliefs. Our aim is thus to explore how pupils' agency beliefs and control expectancy change during the late elementary school years and whether studying in a class with a special emphasis moderates this change.

## 2. Theory

### 2.1. *Action-Control Theory of Agency Beliefs and Control Expectancy*

Individuals' perceptions of their own competence and abilities are central in many motivational theories. They can be seen as an answer to the question "Can I do this task?" (Eccles & Wigfield, 2002), and thus refer to the beliefs individuals have of their capabilities to carry out the task they are faced with, or to produce a desired outcome. Children's self-beliefs relate to their cognitive, social, and emotional engagement in school (Bong & Skaalvik, 2003). On a general level, it follows that the more a child believes in their own abilities to succeed, the more motivated they are likely to be, and the better they will probably perform at school (Eccles & Wigfield, 2002).

In this study, we draw on the action-control theory (Skinner et al., 1988; Skinner, Wellborn, & Connell, 1990; Skinner, Zimmer-Gembeck, Connell, Eccles, & Wellborn, 1998) in examining children's action-control beliefs. In this theory, action is conceptualised as a threefold construct, which entails the agent, aims, and means of the action. Accordingly, an individual has different kinds of beliefs concerning each part of the action. These beliefs are central in shaping individuals' actions, and they contribute to the motivational base of individuals' behaviour and strivings. In the context of school, they influence how a pupil acts in school, what kind of goals they set, and in which ways and how hard they strive for achieving those goals. Numerous studies have confirmed the positive relation between self-beliefs and achievement (e.g. Eccles & Wigfield, 2002; Pajares & Schunk, 2001; Skinner et al., 1998), and this relationship appears to be reciprocal by nature. That is, earlier experiences of success or failure shape individuals' expectancies and beliefs of their own competence, and vice versa (Skinner et al., 1998).

The action-theory model of control differentiates between means-ends-beliefs, agency beliefs, and control expectancy, which can all be conceptualised and measured separately (Skinner et al., 1988, 1990). Means-ends-beliefs (Little & Lopez, 1997; Skinner et al., 1990; Skinner et al., 1998) refer to individuals' beliefs about factors that potentially result in certain outcomes. In a school context, this would include, for example, effort and ability as individual factors that contribute to achievement (e.g. Little & Lopez, 1997). Agency beliefs, in turn, refer to the beliefs the agent has about themselves in relation to the possible means (Skinner et al., 1988, 1990). Thus, they share many similarities with concepts such as academic self-concept (e.g. Marsh, 1990) and efficacy beliefs (Bandura, 1993). Agency beliefs can be said to "reflect children's personal judgments of their own performance potential" (Little, Lopez, Oettingen, & Baltes, 2001). In a school context, these beliefs refer, for example, to the notions of how industrious and able the pupil is. The third set of beliefs, control expectancy, refer to the relationship between the agent and the aims of action (Skinner et al., 1988; Skinner et al., 1990). In other words, they deal with the beliefs about the extent to which an agent can produce desired events and prevent undesired ones, without a reference to specific means. Thus, these beliefs comprise expectations of how likely one is to, for example, succeed at school or get good grades. As agency beliefs and control expectancy seem most predictive of school-related outcomes, and are also more influenced by the educational context (e.g. Little et al., 2001; Little & Lopez, 1997), in this study, we will focus on these beliefs.

Children's understanding of action and themselves as an agent develops and changes considerably during childhood and the primary school years. Young children are not able to distinguish tasks

according to the means they require. This ability develops gradually, and at age 9 or 10, children can distinguish tasks where success depends on luck or chance from those where it depends on effort or skill (Little & Lopez, 1997; Skinner et al., 1998). Also, the understanding of effort and ability becomes more differentiated by the end of primary school (Nicholls & Miller, 1983; Skinner et al., 1998). At this age, children begin to understand the interdependent relation between ability and effort, and understand that greater effort might imply lesser ability (Nicholls, 1978). In general, children's self-beliefs usually decline during the elementary years, as children's ability to evaluate themselves increases and social comparison processes become more significant (e.g. Wigfield & Eccles, 2000; for a review see Stipek & Iver, 1989). As a result of this, self-evaluations become more realistic and precise during the elementary school years (Pintrich & Schunk, 1996). However, it must be noted that while the mean level, on average, might show decrease in self-beliefs, the developmental trajectories for specific beliefs can vary (Geldhof & Little, 2011). For example, in Little, Stetsenko, and Maier's (1999) study, pupil's agency beliefs of ability increased from grade 2 to grade 11, while agency beliefs of effort decreased.

Action-control beliefs have been noted to differ by gender. Girls stress the importance of effort as means of achievement, whereas boys trust in abilities and luck (Niemivirta, 2000). A general tendency seems to be that compared with boys, girls see themselves as more industrious, but underestimate their abilities more easily. These gender differences are especially visible when the focus is on domain-specific beliefs (e.g. Diseth, Meland, & Breidablik, 2014; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Stipek & Gralinski, 1991). However, when focusing on beliefs on a more general level, the differences are smaller (e.g. Niemivirta, 2000; Stetsenko, Little, Gordeeva, Grasshof, & Oettingen, 2000) or even in the opposite direction (Stetsenko, Little, Oettingen, & Baltes, 1995). Contextual factors, such as different kinds of schooling cultures, may also influence gender differences. Stetsenko et al. (2000) found out that in schooling contexts where gender stereotyping was stronger, also gender differences were more pronounced.

## **2.2. Classroom as the Context of Development**

Many theories of perceived control and motivation share the assumption of human beings' innate need for competence (Skinner et al., 1998). Even though there may be some inherent individual differences in mastery motivation, context plays a significant role in shaping this need (Little, Hawley, Henrich, & Marsland, 2002). The environment can either support or hinder individual's aspirations to fulfil the need for competence (Connell, 1990). The classroom as a learning environment sets frames for social comparison, and provides standards for individuals' self-evaluations, which, in turn, influences the formation of self-beliefs (Harter, 1998). Classrooms also foster comparison processes that are natural to all human beings (Festinger, 1954); grading practices, teacher feedback, and the pressure to do well easily create an atmosphere where comparing one's own performance, skills, and attitudes to those of others is reinforced (Dijkstra, Kuyper, van der Werf, Buunk, & van der Zee, 2008; Malmberg, Wanner, & Little, 2008).

Different grouping practices such as ability-grouping and tracking influence the composition of the classroom. Pallas, Entwisle, Alexander, and Stluka (1994) specified three mechanisms through which grouping pupils based on their achievement can affect individuals' learning: institutional, instructional and social. The institutional mechanism comprises institutionalised understanding of qualities of certain tracks. These shared views about the value of different groups or tracks form the expectations of other people (including parents and teachers), which, in turn, affect individuals who are the members of these groups. The instructional level deals with the quantity and quality of teaching and instruction in different groups, and the social mechanism refers to the social settings that different groups constitute. Therefore, it is the level where social comparison processes takes place.

Prior studies have indicated two opposite effects of the mechanisms of peer influence: assimilation and contrast (Malmberg et al., 2008). Assimilation effect refers to a process where individuals' performances or attitudes start to resemble those they encounter around them, whereas

contrast effect claims the opposite (e.g. Trautwein, Lüdtke, Marsh, Köller, & Baumert, 2006). Research on the latter has focused specifically on pupils' academic self-concept, and the core hypothesis is that equally able pupils form a lower academic self-concept in a group where the average ability level is high, compared to a group where the average ability level is low (i.e. the big-fish-in-a-little-pond – phenomenon; Marsh, 1984; Marsh et al., 2008). One explanation for these contrasting effects might be that different tracking systems produce different types of development, as they offer different reference groups for social comparison processes (Richer, 1976). Systems where tracking is explicit (and prevalent in all subjects), the reference group is often narrower than in systems where grouping is more implicit and not present in all subjects (Belfi, Goos, De Fraine, & Van Damme, 2012). Although the effects of tracking, on average, are usually fairly small (for a review on achievement outcomes, see Hattie, 2002, 2009; for a review on non-achievement outcomes, see Belfi et al., 2012), studies also suggest that class composition can influence different kinds of pupils in different ways. The heterogeneity of a class can be especially advantageous for pupils with weak academic skills, who benefit from the presence of dissimilar classmates (Carman & Zhang, 2012; Duru-Bellat & Mingat, 1998).

### ***2.3. Classes with a Special Emphasis in the Finnish Comprehensive School System***

Classes with a special emphasis were introduced to the Finnish school system during the educational reform in the 1990s. Changes in the educational legislation gave families the right to apply to a particular school, and schools together with the local education authorities now had the possibility to profile their teaching and establish selective classes (e.g. Rinne, 2000; Seppänen, 2003a). As a consequence of school choices and the selection to classes with special emphasis, pupils are distributed into schools and classes differently than they would otherwise do, based on their home address (Bernelius, 2013).

Applying for a class with a special emphasis is possible in Finland at three stages: at the beginning of comprehensive school (at age seven), at the beginning of grade three, and at the beginning of grade seven. Although the options to choose vary between municipalities, school choice and classes with a special emphasis are mostly an urban phenomenon and present only in large cities, where sometimes more than 30% of pupils attend such classes (Seppänen, 2003a; Seppänen, Kalalahti, Rinne, & Simola, 2015).

Classes with a special emphasis cover both academic (e.g. science and mathematics) and non-academic (e.g. music and sports) subjects (Seppänen et al., 2012; Seppänen et al., 2015), to which pupils are usually selected based on aptitude tests. Schools are allowed to organise emphasised teaching in separate classes or to arrange emphasised teaching within general classes, and although no exact statistics are available, studies show that schools commonly organise such teaching in separate classes (Simola, Seppänen, Kosunen, & Vartiainen 2015). Pupils studying in a class with a special emphasis usually have one or two additional lessons on the emphasised subject per week.

The effects of studying in a class with a special emphasis versus studying in a class without a special emphasis have been speculated. Classes with a special emphasis have many similarities with tracks that are formed on the basis of pupils' achievement (Berisha & Seppänen, 2017; Varjo, Kalalahti, & Silvennoinen, 2014). Politicians endorsing emphasised teaching and school choice in the 1990s believed that the right to choose would increase pupils' motivation (Seppänen, 2003b). Parents also seem to maintain that a selected peer group will provide a more positive and supportive learning environment, which, in turn, will enhance learning and motivation as well as the academic skill development of their child (Kosunen & Carrasco, 2016; Kosunen & Seppänen, 2015). Despite these speculations, however, no prior empirical studies have examined whether studying in a selective class with a special emphasis has an effect on learning achievements or self-beliefs. The present study aims to fill this gap.

### **3. The present study**

The aim of this study is to examine whether studying in a class with a special emphasis versus studying in a class without a special emphasis predicts the level and change in children's self-beliefs (i.e.

agency beliefs and control expectancy) from grade four to grade six, after controlling for the effects of gender, prior school achievement, and parents' education.

Prior studies have shown that choosing a class with a special emphasis is related to social class, and is typical of highly-educated families (e.g. Kosunen, 2014; Seppänen et al., 2015). Children studying in classes with special emphasis also tend to have high grade point average (GPA) (e.g. Berisha & Seppänen, 2017; Kalalahti, Silvennoinen, & Varjo, 2015; Seppänen et al., 2012). Finally, as both GPA and parents' education positively correlate with pupils' self-beliefs (Niemi-virta, 2000), we hypothesised that compared to pupils who study in a class without a special emphasis, pupils attending classes with a special emphasis will have higher GPA (hypothesis one [H1]), come from families with higher educational level (H2), and have more positive self-beliefs (H3), and that higher prior GPA predicts more positive self-beliefs (H4). Based on prior research (e.g. Niemi-virta, 2000) we expect girls to display stronger agency beliefs of effort than boys (H5a) and boys to display stronger agency beliefs of ability than girls (H5b), but we do not expect gender to moderate the change in these beliefs. We also expect to detect an overall decline in pupils' self-beliefs from grade four to grade six (e.g. Wigfield & Eccles, 2000) (H6), but we have no hypotheses about the effects of class type on this change.

## 4. Methods

### 4.1. Participants

This research is part of a longitudinal study for which 16 schools in a large municipality<sup>1</sup> in Finland were originally randomly selected using the equal-probability method. Later, four schools were added into the sample as pupils from the original sample had transferred to them (see, Vainikainen, Wüstenberg, Kupiainen, Hotulainen, & Hautamäki, 2015). The participants ( $N = 1,025$ ; 52% girls; mean age at grade four = 9.60, standard deviation [SD] = .52) came from 47 classes, of which 11 were classes with a special emphasis ( $n = 291$ ). Of those classes, six focused on languages, four on music and/or dance, and one on sports. Due this distribution, we were not able to consider different classes separately, but rather focused on the overall status (i.e. studying in a class without vs. with a special emphasis). The data collection was carried out by classroom teachers according to instructions by the research team as part of normal school work. The data collections took place right after the summer break at the beginning of grade four and at the end of grade six before the transition to lower secondary education.

### 4.2. Measures

Children's agency beliefs and control expectancy were measured by scales based on Skinner et al.'s (1988) action-control theory. With respect to agency beliefs, we used scales for assessing agency beliefs of ability (e.g. "I am a clever and able student") and agency beliefs of effort (e.g. "I work hard to do well at school"). Control expectancy was measured with one scale that included items referring to the pupil's beliefs of succeeding at school (e.g. "I can learn the things required to, if I decide to"). Each scale consisted of three items on a seven-point Likert-scale ranging from one (not true at all) to seven (very true).

The independent variables used in the analyses were mother's education level, pupil's school achievement, gender (boy or girl), and class type (a class with or without a special emphasis). The

<sup>1</sup>In this municipality, the options to choose schools are numerous. When starting school, the pupil can choose either a general class without emphasis, or apply for a class with special emphasis on a foreign language or music. Both options can be made within local municipal schools, or in other municipal or private schools. At the end of grade two, pupils can either continue studying in the class where they started school, or apply to a class with a special emphasis. At this point, the options to choose are wider than at the beginning of the school, and the range of subjects emphasised comprises different languages as well as other academic subjects (e.g. science) and arts (e.g. sports and music). Most options are offered at the beginning of grade seven, when a pupil can choose from numerous different classes with special emphasis.



information on the mother's education was acquired from the parents when their child was at grade four using a scale with three options, (1) comprehensive school/general or vocational upper secondary school, (2) post-secondary education or higher vocational level, polytechnic education or bachelor's degree, and, (3) Master's degree or further.<sup>2</sup> Pupil's school achievement was a composite score (GPA) calculated from pupil's scores in mother tongue and literacy, mathematics, science and foreign language at the end of grade three. The scores were reported by teachers at the beginning of grade four ( $M = 8.20$ ,  $SD = .95$  on a scale ranging from 4 [failed] to 10 [excellent]). In Finland, a class teacher normally teaches the same class from grade three to six, and the classes with a special emphasis are usually formed for the same period. Thus, school scores in this study were mainly reported by the teachers teaching the classes during the whole follow-up period.

### 4.3 Data Analysis

Descriptive statistics were calculated with SPSS 21.0 and structural equation modelling was performed using the Mplus statistical package version 7.1 (Muthén & Muthén, 2010). The distribution of all variables were within the recommended limits for using maximum likelihood estimation (Kline, 2005). The means and distributions of each item are given in the [Appendix](#).

Structural validity and measurement invariance of the latent factors over time were analysed through longitudinal confirmatory factor analysis. Testing of measurement invariance was conducted by hierarchically imposing restrictions to the model parameters, and then comparing different models (Widaman, Ferrer, & Conger, 2010). Next, the latent means were constrained to be equal in order to examine latent change over time. After the tests of invariance, separate model for each dependent variable (i.e. agency beliefs of ability, agency beliefs of effort, and control expectancy) were estimated with all independent variables (i.e. class type, mother's education, gender and prior GPA) added as predictors. The fit indices used for evaluating the overall model fit were Comparative Fit Index (CFI) with a cutoff value of  $> .95$  (Bentler, 1990), the root mean square error of approximation (RMSEA) with a cutoff value of  $< .06$  (Steiger, 1990) and the standardised root mean square residual (SRMR) with a cutoff value of  $< .08$  (Hu & Bentler, 1999). For assessing comparative model fit, chi-square difference tests were performed (Millsapp & Cham, 2012). As chi-square difference test is sensitive to sample size, also change in CFI in different models were examined. According to Cheung and Rensvold (2002), a value of  $\Delta CFI$  smaller than or equal to  $-.01$  indicates that the assumption of invariance should not be rejected.

## 5. Results

First, we tested measurement invariance over time in each target variable to ensure that identical constructs were measured at both measurement points. This was done by stepwise constraining the factor loadings (metric invariance), intercepts (scalar invariance), error terms, and factor variances to be equal across the measurement points. As shown in the [Table 1](#), full metric invariance was achieved in each model. However, the test for scalar invariance indicated that in the case of agency beliefs of ability and effort, one pair of intercepts had to be released for sufficient model fit. Next, residual variances of each item pairs (except for those that were released in the previous stage) were constrained to be equal. In agency beliefs of ability and control expectancy, one pair of residual variances were released to prevent the fit indices from decreasing. Also one pair of control expectancy items were allowed to correlate. Next, variances of the latent factors were set equal. As shown in [Table 1](#), model fit held after this in both types of agency beliefs but not in control expectancy, for which latent variances were released.

<sup>2</sup>Mother's education level was chosen as a measurement for parent's educational background as prior studies have found it to be more strongly and consistently associated with children's school choice (e.g. Reay, 1998) and self-beliefs (Niemi-virta, 2000) than father's education level.



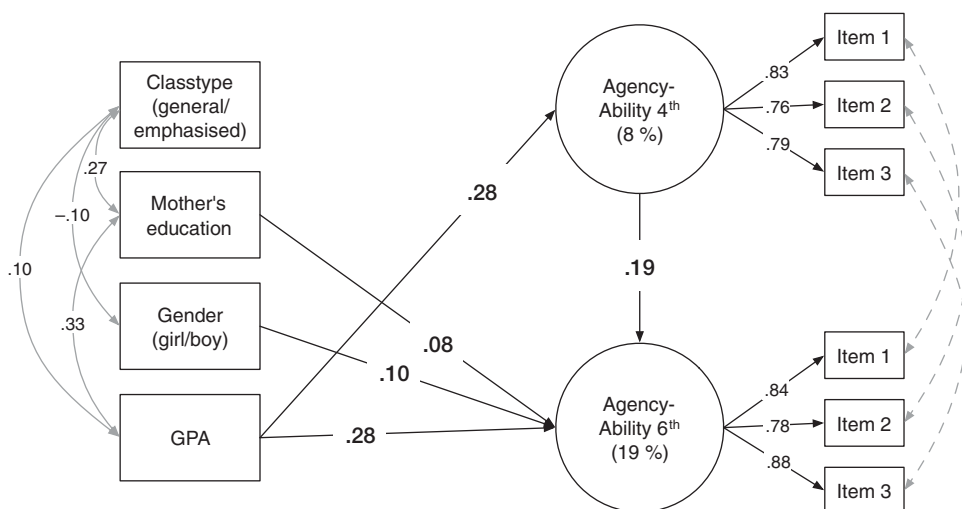
**Table 1.** Goodness-of-fit Statistics for Alternative Models.

Model	Hypothesis	$\chi^2$	df	<i>p</i>	CFI	RMSEA	SRMR	Hypothesis test	$\Delta\chi^2$	$\Delta$ df	$\Delta p$	$\Delta$ CFI
<i>Agency beliefs of ability</i>												
M1	Configural invariance	7.117	5	0.212	.999	.020	.014	Overall fit				
M2	Metric invariance	12.118	7	0.097	.998	.026	.029	M2-M1	5.001	2	0.082	−0.001
M3	Scalar (item intercept) invariance	142.255	9	0.000	.949	.116	.071	M3-M2	130.14	2	0.000	−0.049
M3b	M3 + one pair of intercepts (i2) free	13.115	8	0.108	.998	.024	.028	M3b-M2	0.997	1	0.318	0.049
M4	Residual variances equal except for i2	55.171	10	0.000	.983	.064	.074	M4-M3b	42.056	2	0.000	−0.015
M4b	M4 + one pair of residual variances (i3) free	24.594	9	0.004	.994	.040	.048	M4b-M3b	12.479	1	0.000	−0.004
M5	Equivalence of factor variance	26.755	10	0.003	.994	.039	.070	M5-M4b	2.161	1	0.141	0
<i>Agency beliefs of effort</i>												
M6	Configural invariance	1.494	5	0.914	1.000	.000	.007	Overall fit				
M7	Metric invariance	2.664	7	0.914	1.000	.000	.014	M7-M6	1.17	2	0.557	0
M8	Scalar (item intercept) invariance	38.191	9	0.000	.981	.055	.026	M8-M7	35.527	2	0.000	−0.019
M8b	M8 + one pair of intercepts (i1) free	3.005	8	0.934	1.000	.000	.015	M8b-M7	0.341	1	0.559	0.019
M9	Residual variances equal except for i1	19.071	10	0.039	.994	.029	.062	M9-M8b	16.066	2	0.000	−0.006
M10	Equivalence of factor variance	20.588	11	0.038	.994	.028	.069	M10-M9	1.517	1	0.218	0
<i>Control expectancy</i>												
M11	Configural invariance	5.097	5	0.404	1.000	.004	.013	Overall fit				
M12	Metric invariance	6.134	7	0.524	1.000	.000	.017	M12-M11	1.037	2	0.595	0
M13	Scalar (item intercept) invariance	7.796	9	0.554	1.000	.000	.019	M13-M12	1.662	2	0.435	0
M14	Residual variances equal	149.672	12	0.000	.940	.102	.079	M14-M13	141.876	3	0.000	−0.06
M14b	M14 + one pair of residual variances (i2) free	26.028	10	0.004	.993	.038	.063	M14b-M13	18.232	1	0.000	−0.007
M15	Equivalence of factor variance	58.979	11	0.000	.979	.063	.140	M15-M14b	32.951	1	0.000	−0.014

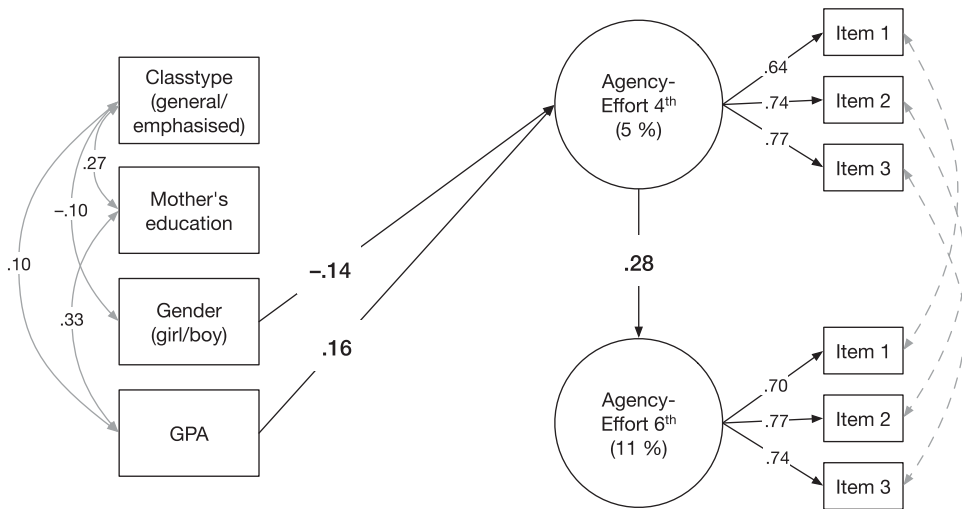
Since partial, yet sufficient measurement invariance was achieved for each target variable, we next added all predictors simultaneously into the models. This allowed us to examine the effects of the explanatory variables on agency beliefs and control expectancy as well as on the change in them over time. All significant effects are reported in Figures 1–3. The model fit the data well with respect to each construct: for agency beliefs of ability ( $\chi^2 = 65.663$ ,  $df = 26$ ,  $p < .001$ ; CFI = .986; RMSEA = .037; SRMR = .072), for agency beliefs of effort ( $\chi^2 = 26.910$ ,  $df = 25$ ,  $p = .360$ ; CFI = .999; RMSEA = .008; SRMR = .019), and for control expectancy ( $\chi^2 = 95.392$ ,  $df = 26$ ,  $p < .001$ ; CFI = .972; RMSEA = .049; SRMR = .046).

With regard to our first hypothesis (H1), we found that class type correlated with grade three GPA as expected, but the relationship was weak ( $r = .10$ ,  $p = .003$ ). Thus, school achievement explained only 1% of the class type membership and vice versa. The correlation between mother's education and class type was stronger ( $r = .27$ ,  $p < .001$ ), which supported our second hypothesis (H2). Mother's education also correlated significantly with children's school achievement ( $r = .32$ ,  $p < .001$ ), thus confirming previous findings. As to the effects on agency beliefs and control expectancy, mother's education marginally predicted the level of control expectancy in grade four ( $\beta = .08$ ,  $p = .054$ ), and significantly the change in both agency beliefs of ability ( $\beta = .08$ ,  $p = .034$ ) and control expectancy ( $\beta = .08$ ,  $p = .040$ ) over time. The higher the mother's education, the higher the child's control expectancy in grade four and the higher the increase in agency beliefs of ability and control expectancy in grade six. However, these effects were rather small.

Regarding the other effects on control expectancy, contrary to our assumptions (H3), class type did not predict pupils' agency beliefs or control expectancy. That is, when taking into account the effects of the other background variables, pupils studying in different kinds of classes (with or without a special emphasis) did not differ from each other in terms of their agency beliefs and control expectancy at grade four, nor was the change in these beliefs different between these groups of pupils. However, in support of our hypothesis (H4), we found prior GPA to have a significant effect on each type of action-control belief in grade four, meaning that pupils with better prior school achievement held more positive beliefs, even after controlling for mother's education and gender at the first measurement point. This effect was equally strong for agency beliefs of ability ( $\beta = .28$ ,  $p < .001$ ) and control expectancy ( $\beta = .27$ ,  $p < .001$ ) and slightly weaker for agency beliefs of effort ( $\beta = .16$ ,  $p < .001$ ). Moreover, prior GPA also predicted change in agency beliefs of ability ( $\beta = .28$ ,  $p < .001$ )



**Figure 1.** Significant effects (standardised coefficients) and latent correlations ( $p < .05$ ) of the full predictive model for agency beliefs of ability.

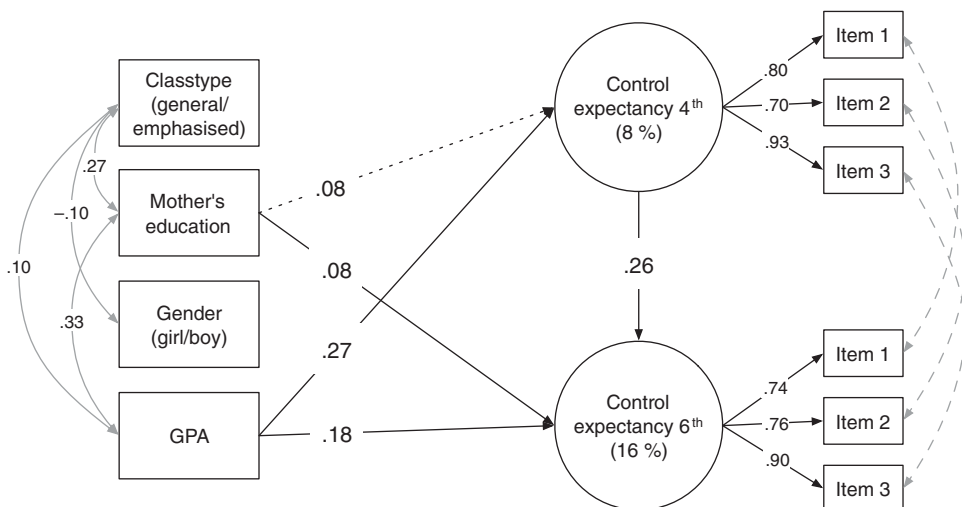


**Figure 2.** Significant effects (standardised coefficients) and latent correlations ( $p < .05$ ) of the full predictive model for agency beliefs of effort.

and control expectancy ( $\beta = .18, p < .001$ ), thus demonstrating an additional increase (or less decline) in these particular beliefs among pupils with better prior school achievement.

Gender was associated with class type so that it was slightly more common for girls than for boys to be in a class with a special emphasis ( $r = -.10, p = .003$ ). In support of our hypothesis (H5a), girls reported slightly stronger agency beliefs of effort than boys in grade four ( $\beta = -.14, p < .001$ ), but against our hypothesis (H5b), no gender effects were found on agency beliefs of ability, nor on control expectancy. However, gender did predict change in agency beliefs of ability ( $\beta = .10, p = .002$ ) suggesting that the increase over time was stronger (or decline weaker) for boys compared to girls.

Finally, the predictions between grade four and grade six action-control beliefs were all significant, thus indicating some degree of stability over time. The relative change (i.e. the reference point being fixed to zero at grade four) between latent means over time demonstrated no change



**Figure 3.** Significant effects (standardised coefficients) and correlations ( $p < .05$ ; dashed arrow:  $p = .054$ ) of the full predictive model for control expectancy.

in agency beliefs of ability ( $\Delta M = -.050, p = .281$ ), significant decrease in agency beliefs of effort ( $\Delta M = -.59, p < .001$ ) and significant increase in control expectancy ( $\Delta M = .21, p < .001$ ). These results supported our hypothesis (H6) only with regard to agency beliefs of effort. All in all, the background variables explained 8%, 5%, and 8% of variance in agency beliefs of ability, effort, and control expectancy in grade four, respectively, and with grade four measurements included, 19%, 10%, and 16% of the variance in the corresponding grade six measures, respectively.

## 6. Discussion

Classes with a special emphasis have become an inseparable part of the Finnish comprehensive school system since the 1990s, and many educational actors (i.e. parents, policy-makers, researchers) have speculated about the consequences of this development. On a societal level, these selective classes have been seen as a threat to the equality of the comprehensive school system, whereas on an individual level, they have been viewed as an opportunity to enhance pupils' motivation. Despite the growing interest in research on school choice in Finland, no previous studies have examined the differences in students' action-control beliefs with respect to attending classes with or without a special emphasis.

The aim of this study was to examine how pupils' agency beliefs and control expectancies change during the elementary years (from grade four to six), and whether studying in a class with a special emphasis versus a class without an emphasis contributes to this, after taking into account the effects of gender, school achievement, and mother's education. The participants came from 20 randomly selected schools, and 28% of them studied in a class with a special emphasis.

As to the findings, our hypotheses were partially supported. Class type was associated with pupil's prior achievement and with mother's education, thus demonstrating that studying in a class with a special emphasis is more typical for children with higher achievement and more educated mothers. This is in line with findings in Finland showing that choosing a class with a special emphasis is related to social class (e.g. Kosunen, 2014; Seppänen et al., 2015). This, in turn, concurs with international studies indicating that educational choices are especially important to middle-class parents, who stress the importance of education and see it as an investment for the future (e.g. Crozier et al., 2008; Vincent, Ball, & Kemp, 2004). Parents with higher education have wider social networks, which help them to make more beneficial choices for their children (Ball & Vincent, 1998). In the Finnish context, it has been noted that the selection criteria of classes with a special emphasis favour middle-class children, as success in the aptitude tests usually demands corresponding interests and prior hobbies, which, in turn, requires more resources from the families (Kosunen & Seppänen, 2015).

As expected, also prior school achievement and gender predicted pupils' action-control beliefs. Prior achievement positively predicted action-control beliefs of ability and control expectancy at grade four, as well as the change in them at grade six. Regarding agency beliefs of effort, school performance only predicted the scores at grade four. These findings are in agreement with previous research showing that self-related beliefs develop together with experiences of success or failure; those who do better at school are also likely to develop stronger sense of agency and control over achievement (Bong & Skaalvik, 2003). However, our findings further add to this by showing that also the increase in such control-related self-beliefs over time is steeper in those who succeed. Action-control beliefs were also partly gendered. Girls reported higher levels of effort than boys at grade four, which is in line with previous studies (e.g. Niemivirta, 2000). However, contrary to our hypothesis, gender was not related to pupils' agency beliefs of ability at grade four, but it predicted change in pupils' agency beliefs of ability so that the average change was more positive (or less negative) for boys compared to girls. This implies that the commonly detected relative gap in ability perceptions favouring boys takes place only by the end of the elementary school. Interestingly, however, no gender differences were associated with control expectancy. These developmental dynamics are clearly an issue that warrants further investigation.

Interestingly, the changes in pupils' action-control beliefs were somewhat different from what was expected. After controlling for the effects of pupils' background and prior achievement, only agency beliefs of effort declined from grade four to grade six. There were no changes in the average level of pupils' agency beliefs of ability, and control expectancy became even more positive over time. While these results only partially supported our hypothesis of declining self-beliefs, they are not entirely unexpected. While the general tendency seems to be that pupils' self-related beliefs become more realistic during the elementary school years and thereby decline over time (e.g. Wigfield & Eccles, 2000), also a different kind of change has been reported (Little et al., 1999). This study was conducted at a time period when children's understanding of ability and effort continues to differentiate (Nicholls & Miller, 1983), which might partially explain the different patterns of change in self-evaluations of effort and ability. As children are now more likely to attribute failure following effort to lack of ability, they may be more cautious in estimating their own effort. Moreover, within the action-control framework, the operationalisation of ability perceptions is less explicitly linked to social comparison but rather to personal potential and capability (i.e. being good at something vs. having the capacity), which might explain the lack of average decline over time. This also applies to control expectancy, which refers to the individual's sense of having the potential or capability to produce desired outcomes, irrespective of the actual outcomes. Children's developing sense of autonomy and individuality might thus be reflected in their self-evaluations.

The most important and interesting result of this study was that, unlike what we expected, class type did not predict pupils' action-control beliefs nor the change in them over time. In other words, pupils studying in a class with or without a special emphasis did not differ from each other in terms of their agency beliefs or control expectancy when the other background variables were taken into account. While this finding is against our hypothesis, it is not entirely unexpected in the light of the prior research. After all, studies (e.g. Belfi et al., 2012; Hattie, 2009) have shown that in most of cases, the effects of tracking on achievement or motivation are rather small. It is also possible that some previous findings showing positive effects of types of tracking similar to classes with a special emphasis might be due to other confounding factors (e.g. parental education or children's achievement level) not being taken into account. It also has to be noticed that Finnish basic education system with ability – or interest-based selection to classes with or without a special emphasis is an unique context of study and can not be directly compared to systems where tracking pupils' on the basis of their achievement is a prevailing practice.

Although our finding is positive in the sense that studying in a class with a special emphasis does not seem to have an effect on pupils' motivation, it cannot be considered as an argument for such practices. One cannot ignore studies showing how different tracking practices can have a significant negative impact on educational equality (e.g. Hanushek, 2006; Hattie, 2009). While the educational context of these studies is remarkably different from the Finnish comprehensive school system, they still provide some essential points of consideration. Achievement-based tracking have been seen to reinforce the relation between the family background and school achievements (Hanushek, 2006), and while the Finnish comprehensive school system does not have any formal tracking and all the pupils get equal opportunities for future studies, classes with a special emphasis represent implicit tracks as they diversify the educational routes of children from different social backgrounds within the comprehensive school (Berisha & Seppänen, 2017; Varjo et al., 2014). Increased selectivity through classes with a special emphasis, as well as the increased school choice in general, have begun to increase the achievement gap between classes (Hautamäki, 2010) and schools (Bernelius, 2013), since pupils applying for classes with a special emphasis have better school grades on average. This situation is new in Finland, since differences in achievement between classrooms and schools have thus far been small in international comparisons (Sulkunen et al., 2010). Despite the fact that we found no differences in action-control beliefs between pupils in classes with or without a special emphasis, there could be differences in some other relevant educational outcomes. Given the notion of cumulative developmental cycles found in motivation literature (e.g. Bong & Skaalvik, 2003), it is conceivable that the selectiveness of classes with a special emphasis might lead to differences in some

aspects of learning. Therefore, research should test this possibility with other measures, and extend the studies to include various indicators of achievement, other aspects of motivation, as well as facets of well-being (e.g. engagement and emotions) and classroom experiences (e.g. collaboration and classroom climate). It is also worth noting, that when pupils move to lower secondary education it is possible that the detected differences become intensified, as the role of self-beliefs in learning strengthens (Demetriou & Kazi, 2006). Similarly, the effect of family background on pupils' academic achievement has shown to become stronger as the pupils get older (Caro, McDonald, & Willms, 2009).

Further research should also take into account the differences between different subjects. The major limitation of this study was that despite the relatively large sample, the number of pupils in different emphasised school subjects (e.g. mathematics, languages, music and arts) was too small to analyse these effects separately for each subject. Although this is partly a function of the system (i.e. emphasised classes are mostly present only in large cities and their total number is relatively small), such studies would enable us to use more specific measurements and detailed analysis, and most importantly, compare these possible effects between different types of school subjects, or at least between subjects with an academic (e.g. mathematics, science, languages) versus a non-academic (e.g. music, arts, sports) emphasis.

## 7. Conclusions

Our study shows that the average changes in elementary school pupils' action-control beliefs take a different course depending on the type of belief, and that different beliefs are differently related to gender and family background. Thus, when examining the beliefs pupils have about themselves and how those beliefs relate to the educational context and outcomes, it is of particular importance to pay attention to the type of belief in question. Future research should also be aware of the role family background and gender play in educational choices and their effects on the pupils self-beliefs.

Although our findings suggest that the concerns about the potential discriminating consequences of classes with a special emphasis seem premature, at least in terms of pupils' motivation, further analyses in relation to individual school subjects and on other educational outcomes seem necessary. The analyses should also be extended to later school years, when the pupils' beliefs about themselves have become more differentiated and potentially more sensitive to the influence of peers and the learning environment.

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## References

- Ball, S. J., & Vincent, C. (1998). "I heard It on the grapevine": 'hot' knowledge and school choice. *British Journal of Sociology of Education*, 19(3), 377–400. doi:10.1080/0142569980190307

- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117–148. doi:10.1207/s15326985ep2802\_3
- Belfi, B., Goos, M., De Fraine, B., & Van Damme, J. (2012). The effect of class composition by gender and ability on secondary school students' school well-being and academic self-concept: A literature review. *Educational Research Review*, 7(1), 62–74. doi:10.1016/j.edurev.2011.09.002
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2), 238–246. doi:10.1037/0033-2909.107.2.238
- Berisha, A. K., & Seppänen, P. (2017). Pupil selection segments urban comprehensive schooling in Finland: Composition of school classes in pupils' school performance, gender, and ethnicity. *Scandinavian Journal of Educational Research*, 61, 240–254. doi:10.1080/00313831.2015.1120235
- Bernelius, V. (2013). *Eriytyvät kaupunkikoulut: Helsingin peruskoulujen oppilaspohjan erot, perheiden kouluvalinnat ja oppimistuloksiin liittyvät aluevaikutukset osana kaupungin eriytymiskehitystä*. [Differentiation of urban schools. The differences of pool of pupils, parental school choice and learning outcomes in connection with neighbourhood effects as part of the segregation of the city of Helsinki]. Helsingin kaupungin tietokeskus. Tutkimuksia 2013:1. Helsinki: City of Helsinki Urban Facts.
- Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review*, 15(1), 1–40. doi:10.1023/A:1021302408382
- Burke, M. A., & Sass, T. R. (2013). Classroom peer effects and student achievement. *Journal of Labor Economics*, 31(1), 51–82.
- Carman, K. G., & Zhang, L. (2012). Classroom peer effects and academic achievement: Evidence from a Chinese middle school. *China Economic Review*, 23(2), 223–237.
- Caro, D. H., McDonald, J. T., & Willms, J. D. (2009). Socio-economic status and academic achievement trajectories from childhood to adolescence. *Canadian Journal of Education*, 32(3), 558–590.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 9(2), 233–255. doi:10.1207/S15328007SEM0902\_5
- Connell, J. P. (1990). Context, self and action: A motivational analysis of self-system processes across the life span. In D. Cicchetti, & M. Beeghly (Eds.), *The self in transition: Infancy to childhood* (pp. 66–98). Chicago: The University of Chicago Press.
- Crozier, G., Reay, D., James, D., Jamieson, F., Beedell, P., Hollingworth, S., & Williams, K. (2008). White middle-class parents, identities, educational choice and the urban comprehensive school: Dilemmas, ambivalence and moral ambiguity. *British Journal of Sociology of Education*, 29(3), 261–272. doi:10.1080/01425690801966295
- Demetriou, A., & Kazi, S. (2006). Self-awareness in g (with processing efficiency and reasoning). *Intelligence*, 34(3), 297–317. doi:10.1016/j.intell.2005.10.002
- Dijkstra, P., Kuyper, H., van der Werf, G., Buunk, A. P., & van der Zee, Y. G. (2008). Social comparison in the classroom: A review. *Review of Educational Research*, 78(4), 828–879. doi:10.3102/0034654308321210
- Diseth, Å, Meland, E., & Breidablik, D. (2014). Self-beliefs among students: Grade level and gender differences in self-esteem, self-efficacy and implicit theories of intelligence. *Learning and Individual Differences*, 35, 1–8. doi:10.1016/j.lindif.2014.06.003
- Dobbelsteen, S., Levin, J., & Oosterbeek, H. (2002). The causal effect of class size on scholastic achievement: Distinguishing the pure class size effect from the effect of changes in class composition. *Oxford Bulletin of Economics and Statistics*, 64(1), 17–38. doi:10.1111/1468-0084.00003
- Duru-Bellat, M., & Mingat, A. (1998). Importance of ability grouping in French “colleges” and its impact upon pupils' academic achievement. *Educational Research and Evaluation*, 4(4), 348–368. doi:10.1076/edre.4.4.348.6951
- Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, 53(1), 109–132. doi:10.1146/annurev.psych.53.100901.135153
- Eccles, J., Wigfield, A., Harold, R. D., & Blumenfeld, P. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Development*, 64(3), 830–847. doi:10.2307/1131221
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140. doi:10.1177/001872675400700202
- Geldhof, G. J., & Little, T. D. (2011). Influences of children's and adolescents' action-control processes on school achievement, peer relationships, and coping with challenging life events. In R. M. Lerner, J. V. Lerner, E. P. Bowers, S. Lewin-Bizan, S. Gestsdottir, & J. B. Urban (Eds.), *Thriving in childhood and adolescence: The role of self-regulation processes. New directions for child and adolescent development* (Vol. 133, pp. 45–59). San Francisco, CA: Jossey-Bass.
- Hanushek, E. A. (2006). Does educational tracking affect performance and inequality? Differences-in-differences evidence across countries. *The Economic Journal*, 116(510), C63–C76. doi:10.1111/j.1468-0297.2006.01076.x
- Harter, S. (1998). The development of self-representations. In W. Damon (ed.) *Handbook of child psychology. Social, emotional, and personality development* (5th ed., Vol. 3, pp. 553–617). Hoboken, NJ: John Wiley & Sons, xxiv, 1208 pp.
- Hattie, J. A. (2002). Classroom composition and peer effects. *International Journal of Educational Research*, 37(5), 449–481. doi:10.1016/S0883-0355(03)00015-6



- Hattie, J. A. C. (2009). *Visible learning: A synthesis of 800+ meta-analyses on achievement*. Abingdon: Routledge.
- Hautamäki. (2010). Minne vaihtelu menee? Oppilaiden luokkien ja koulujen väliset erot oppimistuloksissa. [Where does the variance go? Differences in achievement between pupils, classes and schools]. In M. Rimpelä & V. Bernelius (Eds.) *Peruskoulujen oppimistulokset ja oppilaiden hyvinvointi eriytyvällä Helsingin seudulla: Metrop-tutkimus 2010–2013* (pp. 49–54). Helsinki: Helsingin yliopisto, Geotieteiden ja maantieteen laitos.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. doi:10.1080/10705519909540118
- Kalalahti, M., Silvennoinen, H., & Varjo, J. (2015). Kouluvalinnat kykyjen mukaan?: Erot painotettuun opetukseen valikoitumisessa [School choices according to aptitude? Differences in the selection of classes with a special emphasis]. *Kasvatus: Suomen Kasvatustieteellinen Aikakauskirja*, 46, 19–35.
- Kline, R. B. (2005). *Principles and practice of structural equation modelling* (2nd ed.). New York, NY: The Guildford Press.
- Kosunen, S. (2014). Reputation and parental logics of action in local school choice space in Finland. *Journal of Education Policy*, 29(4), 443–466. doi:10.1080/02680939.2013.844859
- Kosunen, S., & Carrasco, A. (2016). Parental preferences in school choice: Comparing reputational hierarchies of schools in Chile and Finland. *Compare: A Journal of Comparative and International Education*, 46, 172–193. doi:10.1080/03057925.2013.861700
- Kosunen, S., & Seppänen, P. (2015). The transmission of capital and a feel for the game: Upper-class school choice in Finland. *Acta Sociologica*, 58(4), 329–342. doi:10.1177/0001699315607968
- Little, T. D., Hawley, P. H., Henrich, C. C., & Marsland, K. W. (2002). Three views of the agentic self: A developmental synthesis. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 389–404). Rochester, NY: University Rochester Press.
- Little, T. D., & Lopez, D. F. (1997). Regularities in the development of children's causality beliefs about school performance across six sociocultural contexts. *Developmental Psychology*, 33(1), 165–175. doi:10.1037/0012-1649.33.1.165
- Little, T. D., Lopez, D. F., Oettingen, G., & Baltes, P. B. (2001). A comparative-longitudinal study of action-control beliefs and school performance: On the role of context. *International Journal of Behavioral Development*, 25(3), 237–245. doi:10.1080/01650250042000258
- Little, T. D., Stetsenko, A., & Maier, H. (1999). Action-control beliefs and school performance: A longitudinal study of Moscow children and adolescents. *International Journal of Behavioral Development*, 23(3), 799–823. doi:10.1080/016502599383801
- Malmberg, L. E., Wanner, B., & Little, T. D. (2008). Age and school-type differences in children's beliefs about school performance. *International Journal of Behavioral Development*, 32(6), 531–541. doi:10.1177/0165025408095558
- Marsh, H. W. (1984). Big fish little pond effect on academic self-concept. *Educational Psychology Review*, 2(2), 77–172. doi:10.1007/BF01322177
- Marsh, H. W. (1990). A multidimensional, hierarchical model of self-concept: Theoretical and empirical justification. *Educational Psychology Review*, 2(2), 77–172. doi:10.1007/BF01322177
- Marsh, H. W., Seaton, M., Trautwein, U., Lüdtke, O., Hau, K. T., O'Mara, A. J., & Craven, R. G. (2008). The big-fish-little-pond-effect stands up to critical scrutiny: Implications for theory, methodology, and future research. *Educational Psychology Review*, 20(3), 319–350. doi:10.1007/s10648-008-9075-6
- Millsapp, R., & Cham, H. (2012). Investigating factorial invariance in longitudinal data. In B. Larsen, T. Little, & N. Card (Eds.), *Handbook of developmental research methods* (pp. 109–128). New York, NY: The Guilford Press.
- Muthén, L. K., & Muthén, B. O. (2010). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.
- Nicholls, J. G. (1978). The development of the concepts of effort and ability, perception of academic attainment, and the understanding that difficult tasks require more ability. *Child Development*, 49, 800–814. doi:10.2307/1128250
- Nicholls, J. G., & Miller, A. T. (1983). The differentiation of the concepts of difficulty and ability. *Child Development*, 54, 951–959. doi:10.2307/1129899
- Niemivirta, M. (2000). “Ehkä osaisinkin, mutta kun ei huvita” – Motivaatio ja koulumenestys yläasteen päättyessä. [“Maybe I could, but I don't care to” – Motivation and school achievement at the end of lower secondary education]. In J. Hautamäki, P. Arinen, B. Lindblom, A. Hautamäki, S. Kupiainen, M. Niemivirta & P. Scheinin (Eds.) *Oppimaan oppiminen yläasteella*. Oppimistulosten arviointi, 7. Helsinki: Opetushallitus
- Pajares, F., & Schunk, D. H. (2001). Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. *Perception*, 11, 239–266.
- Pallas, A. M., Entwisle, D. R., Alexander, K. L., & Stuka, M. F. (1994). Ability-group effects: Instructional, social, or institutional? *Sociology of Education*, 67, 27–46. doi:10.2307/2112748
- Pintrich, P., & Schunk, D. (1996). The role of expectancy and self-efficacy beliefs. In P. Pintrich, & D. Schunk (Eds.), *Motivation in education: Theory, research & applications*. Englewood Cliffs, NJ: Prentice Hall Retrieved from: <http://www.uky.edu/~eushe2/Pajares/PS.html>
- Reay, D. (1998). Cultural reproduction: Mothers' involvement in children's primary schooling. In M. Grenfell, & D. James (Eds.), *Bourdieu and education policy: Acts of practical theory* (pp. 55–71). London: Falmer Press.

- Richer, S. (1976). Reference-group theory and ability grouping: A convergence of sociological theory and educational research. *Sociology of Education*, 49, 65–71. doi:10.2307/2112394
- Rinne, R. (2000). The globalisation of education: Finnish education on the doorstep of the new EU millennium. *Educational Review*, 52(2), 131–142. doi:10.1080/713664043
- Seppänen, P. (2003a). Patterns of “public-school markets” in the Finnish comprehensive school from a comparative perspective. *Journal of Education Policy*, 18(5), 513–531. doi:10.1080/0268093032000124875
- Seppänen, P. (2003b). Miten ja miksi kouluvalintapolitiikka tuli Suomen peruskouluun 1990-luvulla?: kouluvalinnan lainsäädäntömuutokset sekä perustelut ja kritiikki kansainvälisessä valossa. [How and why school choice policy arrived at the Finnish comprehensive school during the 1990s. The legislation changes and arguments of the school choice in the international perspective]. *Yhteiskuntapolitiikka* 68, 175–187.
- Seppänen, P., Kalalahti, M., Rinne, R., & Simola, H. (2015). *Lohkoutuva peruskoulu. Perheiden kouluvalinnat, yhteiskuntaluokat ja koulutuspolitiikka*. [Segmenting comprehensive school: Parental school choice, social classes and education policies]. Research in Educational Sciences 68. Jyväskylä: Finnish Educational Research Association.
- Seppänen, P., Rinne, R., & Riipinen, P. (2012). Yläkouluvalinnat, koulujen suosio ja perheiden sosiaalinen asema: Lohkoutuuko perusopetus kaupungeissa?. [School choice, school popularity and families’ social status – segmentation of basic education in Finnish cities?] *Kasvatus: Suomen Kasvatustieteellinen Aikakauskirja*, 43(3), 226–243.
- Simola, H., Seppänen, P., Kosunen, S. & Vartiainen, H. (2015). Oppilasvalikoinnin paluu? [return of pupil selection?]. In P. Seppänen, M. Kalalahti, R. Rinne & H. Simola (Eds.). *Lohkoutuva peruskoulu. Perheiden kouluvalinnat, yhteiskuntaluokat ja koulutuspolitiikka*. [Segmenting comprehensive school: Parental school choice, social classes and education policies] Research in Educational Sciences 68 (pp.87–122). Jyväskylä: Finnish Educational Research Association.
- Skinner, E. A., Chapman, M., & Baltes, P. B. (1988). Control, means-ends, and agency beliefs: A new conceptualization and its measurement during childhood. *Journal of Personality and Social Psychology*, 54(1), 117–133. doi:10.1037/0022-3514.54.1.117
- Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I’ve got it: A process model of perceived control and children’s engagement and achievement in school. *Journal of Educational Psychology*, 82(1), 22–32. doi:10.1037/0022-0663.82.1.22
- Skinner, E. A., Zimmer-Gembeck, M. J., Connell, J. P., Eccles, J. S., & Wellborn, J. G. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development*, 63(2/3), i-231. doi:10.2307/1166220
- Steenbergen-Hu, S., Makel, M. C., & Olszewski-Kubilius, P. (2016). What One hundred years of research says about the effects of ability grouping and acceleration on K–12 students’ academic achievement: Findings of Two second-order meta-analyses. *Review of Educational Research*, 86(4), 849–899.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 173–180. doi:10.1207/s15327906mbr2502\_4
- Stetsenko, A., Little, T. D., Gordeeva, T., Grasshof, M., & Oettingen, G. (2000). Gender effects in children’s beliefs about school performance: A cross-cultural study. *Child Development*, 71(2), 517–527. doi:10.1111/1467-8624.00161
- Stetsenko, A., Little, T. D., Oettingen, G., & Baltes, P. B. (1995). Agency, control, and means-ends beliefs about school performance in Moscow children: How similar are they to beliefs of western children? *Developmental Psychology*, 31(2), 285–299. doi:10.1037/0012-1649.31.2.285
- Stipek, D. J., & Gralinski, J. H. (1991). Gender differences in children’s achievement-related beliefs and emotional responses to success and failure in mathematics. *Journal of Educational Psychology*, 83(3), 361–371. doi:10.1037/0022-0663.83.3.361
- Stipek, D., & Iver, D. M. (1989). Developmental change in children’s assessment of intellectual competence. *Child Development*, 60, 521–538. doi:10.2307/1130719
- Sulkunen, S., Välijärvi, J., Arffman, I., Harju-Luukkainen, H., Kupari, P., Nissinen, K., ... Reinikainen, P. (2010). PISA 2009 ensituloksia. [First Results of PISA 2009]. Reports of the Ministry of Education and Culture 2010:21. Helsinki: Ministry of Education and Culture.
- Trautwein, U., Lüdtke, O., Marsh, H. W., Köller, O., & Baumert, J. (2006). Tracking, grading, and student motivation: Using group composition and status to predict self-concept and interest in ninth-grade mathematics. *Journal of Educational Psychology*, 98(4), 788–806. doi:10.1037/0022-0663.98.4.788
- Vainikainen, M-P, Wüstenberg, S., Kupiainen, S., Hotulainen, R., & Hautamäki, J. (2015). Development of learning to learn skills in primary school. *International Journal of Lifelong Education*, 34(4), 376–392. doi:10.1080/02601370.2015.1060025
- Varjo, J., Kalalahti, M. & Silvennoinen, H. (2014). Families, school choice, and democratic iterations on the right to education and freedom of education in Finnish municipalities. *Journal of School Choice*, 8, 20–48. doi:10.1080/15582159.2014.875408
- Vincent, C., Ball, S. J., & Kemp, S. (2004). The social geography of childcare: Making up a middle-class child. *British Journal of Sociology of Education*, 25(2), 229–244. doi:10.1080/0142569042000205091

- Widaman, K. F., Ferrer, E., & Conger, R. D. (2010). Factorial invariance within longitudinal structural equation models: Measuring the same construct across time. *Child Development Perspectives*, 4(1), 10–18. doi:10.1111/j.1750-8606.2009.00110.x
- Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 68–81. doi:10.1006/ceps.1999.1015

## Appendix

**Table A1.** Descriptive Statistics for All Items.

Item	<i>M</i>	<i>SD</i>	Skewness /standard error	Kurtosis /standard error	<i>N</i>
<i>Agency beliefs of ability at grade four</i>					
I am a clever enough to do well at school	5.81	1.33	−1.324/.079	1.910/.159	947
I am clever and able student	5.68	1.35	−1.245/.080	1.772/.159	944
I have the abilities necessary for success at school	5.95	1.32	−1.605/.080	2.832/.159	942
<i>Agency beliefs of ability at grade six</i>					
I am a clever enough to do well at school	5.77	1.21	−1.024/.079	.892/.158	956
I am clever and able student	5.11	1.38	−.711/.079	.298/.158	959
I have the abilities necessary for success at school	5.87	1.16	−1.131/.079	1.331/.158	960
<i>Agency beliefs of effort at grade four</i>					
I try enough at school	5.89	1.30	−1.509/.080	2.523/.160	938
I work hard to do well at school	5.54	1.46	−1.140/.080	1.088/.159	944
I concentrate well enough in class	5.88	1.24	−1.482/.080	2.587/.159	941
<i>Agency beliefs of effort at grade six</i>					
I try enough at school	5.61	1.32	−1.041/.079	.914/.159	950
I work hard to do well at school	4.97	1.37	−.450/.079	−.056/.158	951
I concentrate well enough in class	5.27	1.34	−.661/.080	.086/.159	943
<i>Control expectancy at grade four</i>					
I can get good marks at school if I want to	4.69	1.81	−.636/.079	−.484/.158	957
I can learn the things required to if I decide to	5.36	1.59	−.950/.080	.350/.159	940
I can do well at school if I decide to	5.17	1.61	−.824/.080	.118/.160	935
<i>Control expectancy at grade six</i>					
I can get good marks at school if I want to	4.94	1.52	−.653/.079	−.084/.157	965
I can learn the things required to if I decide to	5.54	1.31	−.906/.079	.532/.158	958
I can do well at school if I decide to	5.43	1.34	−.946/.079	.816/.158	957